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## Game-Based Approaches for Specializing in Information Technology

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**Abstract:**

*The paper deals with game-based learning approaches to teaching English as a foreign language to students majoring in IT at Kazan Federal University, Russian Federation.*

*As there appeared a lot of game-based teaching methods, the techniques called gamification as well as differences between them are reviewed because both of them are supposed to be similar in education of late. Another problem with games in education is that some scholars still do not differentiate properly between gamification and game-based learning. This misconception is reflected even in their recent scientific works where gamification sometimes is regarded as mere usage of games in learning process.*

*According to researches, the impact of games on learning process is efficient in terms of developing vocabulary and speaking skills, improving foreign language acquisition, boosting motivation and engagement of students and creating opportunities to apply acquired knowledge in practice. Moreover, implementing games in class environment (depending on the type of the game used) enhances critical and logical thinking, problem solving, team work skills. Using various games in the learning process is particularly efficient for IT students, since it is related to their major. Another advantage of game-based learning is that it can be realized within the learning management system (LMS).*

*In conclusion, the experience of the English teachers at Kazan Federal University in introducing game-based methods to teaching process, including its outcomes, is presented.*

**Keywords:** EFL, Game-Based Approach, Gamification, Language, Teaching, Education.

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## **1. Introduction**

Game-based learning and gamification have become popular terms in teaching methodology in education of late. They are both generating considerable interest in terms of complementing traditional teaching techniques, providing diversity in teaching methods, enlivening teaching topics. Games are also good for students as they increase their motivation, develop creative thinking and allow practicing the language in a fun and relaxed way, incorporating challenges into learning process, focusing on the task given and avoiding the failure. In addition, “games have a special role in building students’ self- confidence” and “they can reduce the gap between quicker and slower learners” (Fuszard, 2001). In spite of the fact that each approach has significant benefits, “teachers still find it difficult to integrate this approach in their teaching practice (Production of creative game-based learning scenarios, 2010). This aspect will be dealt in more detail in the next section as well as the experience of English teachers of Kazan Federal University will be presented.

## **2. Methodology**

The present paper aims at differentiating between gamification and game-based learning. Then, application of games in teaching English as a foreign language is reviewed. Finally, the experience of the English teachers at Kazan Federal University in implementing game-based approaches, including the results, is described.

## **3. Results and Discussion**

### ***3.1. Gamification and Game-Based Learning***

The literature review is based on the examining scientific literature and reviewing the works of practicing teachers. The terms “game-based learning” and “gamification” are often used interchangeably. However, they are not similar. Prior to examining application of various game-based teaching approaches, let us consider the definitions of gamification and game-based learning. Oxford Dictionary gives the following definition to the word “gamification”: the use of elements of game-playing in another activity, usually in order to make that activity more interesting (Oxford Learner's Dictionaries). Merriam-Webster Dictionary defines it as the process of adding games or game like elements to something (as a task) so as to encourage participation. According to Macmillan Dictionary, gamification is the process of adding game-like elements to activities and areas that are not games, in order to encourage people to take part and increase success or profits. The teacher Steven Isaacs (2015) states that “gamification is the idea of adding game elements to a nongame situation. Corporate reward programs are a good example. They reward users for certain behaviors” Kapp (2012) describes gamification as the careful and considered application of game thinking to solving problems and encouraging learning using all the elements of games that are appropriate. Gamification is therefore interested in ‘gaming’ as a set of principles, tools and techniques (Opentextbooks, 2016). As for game-based learning, scholars give different definitions. So, game-based learning is viewed as “the use of

digital games with serious goals (i.e. educational objectives), as tools that support learning processes in a significant way". Such scholars as Perrotta, Featherstone, Aston & Houghton (2013) suggest that "game-based learning broadly refers to the use of video games to support teaching and learning", noting that "it is a relatively established notion, it is hard to define precisely". "Game based learning (GBL) is a branch of serious games that deals with applications that have defined learning outcomes. Generally they are designed to balance the subject matter with the gameplay and the ability of the player to retain and apply said subject matter to the real world" (Wikipedia). Game-based learning may or may not involve 'educational' video games (those with an explicit focus on learning and improving attainment) rather than 'leisure-use' video games. In terms of the social dynamics of game-based learning, a common theme is that through games young people cultivate interests and join 'affinity groups' that operate across contexts, as part of their projects of personal development (De Freitas & Griffiths, 2008). In such groups, players engage in sophisticated forms of learning fuelled by the shared passion for gaming. They include forums where players share some hints and advice, wikis. Game based learning is about understanding your users and creating value for them by providing a memorable journey in the game environment. For example, role-playing games enable students to experience and visually understand the world from someone else's eyes. Online social games present real world problems and raise the awareness about these issues inside the game. Game based learning is appealing to teachers as it provides students a safe place to learn from their failures" (Games based learning). Unlike gamification, game-based learning relates to the use of games to enhance the learning experience (Isaacs, 2015).

The analysis of literature shows that there seems to be no generally accepted definitions. Although, the literature review shows that game-based learning is divided into digital and non-digital ones. Non-digital games have long been used by teachers as a means of education. Steven Isaacs notes that "John Hunter has received a lot of positive attention for his game, the World Peace Game, which he has been playing with his 4th graders. Others have used his game or adapted it to suit the content of their curriculum. This is a wonderful example of a non-digital game created by a teacher to enhance the learning experience of students" (Isaacs, 2015). Another teacher Kevin Corbett uses such non-digital games as Monopoly, Risk, Yahtzee, Game of life and Clue. Regarding digital game-based learning, it "dates back to the 1970s with games like The Oregon Trail that are geared toward education" (Isaacs, 2015). However, according to some authors, game-based learning encompasses technological developments that are blurring the lines between formats, spaces, languages and practices associated with digital games, leading to 'blended' experiences, which are not just confined to the digital game itself (eLearning Infographics, 2015).

Taken together, the difference between gamification and game-based learning are the following:

1. The former adds game element to the course and encourage students to achieve their goals, the latter is used to meet learning outcomes and motivate students to take some action and learn;
2. Gamification incorporates achievement badges, points, leader boards, progress bars and levels in the training, game-based learning implements playing or using games to teach;
3. The former is cheaper and easier to build, while the latter is hard and expensive;
4. The former uses incentives, immediate feedback, rewards, the latter involves competition, engagement and immediate rewards to allow students to experience the learning;
5. Gamification refers to changing the entire model of instruction to be a game or game-like, game-based learning can be a descriptor of the entire model of instruction;
6. Gamification encourages collaboration, fun, focus, retention, productivity, creativity, and meaningful choices, and it is a great way to change behaviours or encourage specific behaviours, provide immediate feedback and gratification, and track progress; game-based learning helps in motivating and influencing the learners in a positive way, providing context and engaging the learners, memorizing the concepts in a fun way, as well as it reinforces and consolidates the knowledge in a friendly environment;
7. Gamification is employed when a teacher wants to encourage the learners to take specific actions, motivate the learners and influence their behaviours, to drive innovation and help the learners in building specific skills, engage the learners while promoting the spirit of competitiveness and provide the learners ways to track their own progress; game-based learning is implemented to repackage existing academic content, promote critical and strategic thinking amongst the learners, engage and motivate the learners who are otherwise not engaged and support the struggling learners in learning better (Isaacs, 2015; Miller, 2012; Timothy, 2015; Uberman, 1998).

Taking into consideration the above mentioned information, it is possible to conclude that gamification and game-based learning often overlap. As a result, teachers can use gamification elements and game-based learning in a single lesson.

### ***3.2. Application of Game-Based Approaches in Teaching EFL***

In teaching English as a foreign language, games were used as ice-breakers, warm-ups, in the end of the lesson if there is extra time or during the lesson to add some variety. Researcher Agnieszka Uberman highlights that “many experienced textbook and methodology manuals writers have argued that games are not just time-filling activities but have a great educational value. W. R. Lee holds that most language games make learners use the language instead of thinking about learning the correct forms. He also says that games should be treated as central not peripheral to the foreign language teaching programme. A similar opinion is expressed by Richard-Amato,

who believes games to be fun but warns against overlooking their pedagogical value, particularly in foreign language teaching (Hadfield, 1999a).

The studies consistently found that games can impact positively on problem solving skills, broader knowledge acquisition motivation and engagement. Within the framework of the PPP method (Presentation, Production and Practice) games seem to be implemented to practise language skills or to communicate. But Hadfield (1999b) emphasizes that *“games can be used at all stages of the progression from controlled to free practice, serving at one end of the range as a memory aid and repetition drill, at the other as a chance to use the language freely and as a means to an end rather than an end in itself. They can also serve as a diagnostic tool for teacher, who can note areas of difficulty and take appropriate remedial action.”*

Peculiarity of games in education and the reason why a game takes a significant place in the system of active foreign language learning comes from the fact that it is a method and a form of learning at the same time, because it synthesizes in itself practically all methods of active learning. One of the biggest advantages of game based approach is that everybody is equal in a game, a person's social status, success or failure in other spheres, level of knowledge is not so important there.

Learning through a game is organized by students themselves and it turns into a specific practice, since game creates a situation close to a natural one where students can practice their skills and thus get ready for real life communication. Everybody understands that it is just a game, that is why a game-based approach helps to get rid of certain psychological barriers when learners are afraid to make mistakes. A failure in a game is not regarded as a personal loss but just a mere situation within a game and moreover failures as well as success in a game motivate students to know more, to enhance their language skills.

A game based approach provides a free activity which gives students such a desirable freedom of choice, self-expression and self-development. Another positive factor of using games in learning is that they reveal a person's character. A friendly relaxed atmosphere in a class is a must for a game-based approach. In our practice students very often showed themselves from unexpected sides. Thus, shy students became more sociable, students got to know their groupmates' individual traits or talents (such as good organizing skills, singing, dancing, drawing skills, acting abilities, public speaking skills).

Competitiveness is an innate element of any game what makes it attractive for students. Competitive character of a game in a natural way pushes students to use and improve their language skills. Therefore, game enhances students' motivation and turns into a stimulus for mastering their English. In EFL classes various types of games are used. The choice of a game depends on the purpose of the class, on the skills that a teacher wants to develop in his students, on students' character. Games used for teaching English can be classified according to different criteria. There are a

lot of classifications of language games made by such scholars as J. Hadfield, G. P. McCallum, H. Gaudart and others. Hadfield suggests two ways of classifying language games (Kodotchigova, 2002). In main classification she divides language games into two types: linguistic games and communicative games. The first ones focus on accuracy, such as supplying the correct synonym or derivative. The latter ones focus on successful exchange of information and ideas, such as two people identifying the differences between their two stories which are similar to one another but not exactly alike. When a teacher uses communicative game in the class correctness of the language used becomes second to achieving the communicative goal.

In a more detailed classification Hadfield divides games into 9 categories:

1. Sorting, ordering, or arranging games. For example, students have a set of cards with different products on them, and they sort the cards into edible or non-edible ones. In ESP classes with students majoring in information technologies we make such games closer to students' major, e.g. students get cards with names of programming languages and frameworks and are to classify them according to their types.
2. Information gap games. In such games, one or more students have information that other people need to complete a task. For example, one person might have a picture and their partner needs to make a similar drawing by listening to the information given by the person with the drawing. Information gap games can be one-way, such as the drawing game just described, or a two-way information gap, in which each student has unique information, such as in a Spot-the-Difference task, where each person has a slightly different picture, and the task is to identify the differences. As for ESP variation of such games our students like to get cards for completing gaps with texts about IT companies, developers, new devices.
3. Guessing games. These are games derived from information gap games. One student thinks of a famous person, place, or thing. The other students can ask Yes/No questions to find clues in order to guess who or what the person is thinking.
4. Search games. These games are one more variant on two-way information gap games, with everyone giving and seeking information. Find Someone Who is a popular example. Students are given a table. The task is to fill in all the cells in the table with the name of a groupmate who fits that cell, e.g., someone who is good at some sport, or someone who had some specific technical problem. Students circulate, asking and answering questions to complete their own table and help groupmates complete theirs.
5. Matching games. As the name implies, students need to find a match for a word, picture, or card. For example, participants place 20 word cards, composed of 10 pairs, face down in random order. Everybody turns over two cards at a time, with the goal of turning over a matching pair, by using their memory. These games train memory and since they require quick reaction,

- they are a good way to make students more active especially when they come to English class tired after previous classes.
6. Labeling games. These are a form of matching where students match labels and pictures.
  7. Exchanging games. In these games, participants barter cards, other objects, or ideas. Similar are exchanging and collecting games.
  8. Board games. Scrabble is one of the most well-known board games that specifically highlights language.
  9. Role play games. The terms role play, drama, and simulation are sometimes used interchangeably but can be differentiated (Lewis & Bedson, 1999). Role play can involve students playing roles that they do not play in real life, such as director, while simulations can involve students performing roles that they already play in real life or might be likely to play, such as a patient in a hospital. Dramas are normally scripted performances, whereas in role plays and simulations, students come up with their own words, although preparation is often useful.

A similar classification is offered by Lewis & Bedson (1999). In their classification there is a broader category of movement games (the type of game when learners are physically active, e.g. Find your partner) or task-based games (usually pairs or groups work on meaningful task in the way they enjoy; learners obey clear rules and they have a chance to practise all language skills; teacher is an organizer and facilitator). In addition to Hadfield, they add a very popular type of games nowadays, i.e. computer games (they can be played either at school or at home, individually or in pairs; students mainly practice their reading and writing skills). It should be added that George M. Jacobs makes another distinction between the languages games (Jacobs & Kline Liu, 1996). He divides them into competitive (students try to be first to reach the goal) and cooperative games (participants try to reach the same goal together; they help each other). Jacobs points out that competitive games can be modified to lessen the competitive element and to add a cooperative element which is much more essential for students since it can give them team work skills which can be crucial for their future work.

At Kazan Federal University we use various approaches of teaching, including different types of games while teaching EFL to students specializing in information technology (Sakaeva, Khakimzyanova & Shamsutdinova, 2016). At KFU English is a prescribed general education course for freshmen. Students specializing in information technology have this course for two years. Students are grouped according to their level of English language knowledge. Average number of students in groups is 14-18 students what allows to use different types of games in the class. Game-based approach proves to be effective in teaching any aspect of the English language. Thus, in practical grammar classes games linguistic and communicative games are used. For instance, to practice conditional sentences at first we use matching games, when students are given two sets of cards, one of which contains cards with main clauses, another – cards with conditional clauses of different types, students'

task is to make sentences matching the two halves. With more advanced students the next stage of mastering grammar skills can be role plays. Students can be given a situation where some of them are candidates for the president (minister, city mayor) post, others are interviewers, newspaper reporters asking some questions like ‘What would you do if deceived investor filed a complaint?’ or ‘Who would you invite to take part in the celebration of the anniversary of the city if you were appointed the Mayor of the city?’. This way the whole group communicates using conditional sentences. To make this activity more integrated with students’ major – information technology, we change the situation to a press-conference with the minister of communications and information technology, when students have a good chance to practice not only general English skills, but also their ESP, what makes the whole activity more vibrant, since it is related to the sphere in which students are learning to be experts.

It should be emphasized that it is role plays that take a special place in the EFL classes, since undoubtedly role plays create the atmosphere and communication conditions which are very close to natural ones. Thus they prepare students for real life communication. Role plays provide teaching new vocabulary, enhancing students’ skills in the usage of word collocations, development of communication skills, memory training. While organizing role plays it is essential to keep it through three stages:

1. First of all for a teacher it is essential to prepare for the game – to define the aim of a game, choose the theme, language material, define a situation, make a plan of a role play, prepare hand-outs and illustrations, explain a game to students, its aim, rules, answer students’ questions.
2. Next stage is organizing the game where students act according to their roles.
3. Afterwards there should always be analysis and discussion of the game, when the teacher comments on the role play, students exchange their opinions. Sometimes teachers might forget about this stage, or neglect it because of the lack of time, but for students it is very important to hear their teacher’s opinion, as well as to share their thoughts and impressions with their groupmates.

Role plays provide us with a great instrument of teaching students various skills, developing communication skills is one of the most important tasks for a teacher (Babenko & Sabirova, 2015). For example, at Kazan Federal University in ESP classes one of variations of role plays with information technology students is organizing a tender when students work in groups to prepare a presentation of their new product (device, technical solution, IT system etc.), then they present it to their groupmates and answer questions which refer to different spheres ranging from marketing and public relations to project management, programming and technical support issues. Such role plays in the English language classes prepare students for work with clients, dealing with IT support issues, making presentation of their products. Such activities teach students vital communication skills, teach them to work



in a team, express their own opinion and listen to other opinions. Using some music, presentations, hand-outs facilitate creating the atmosphere which will be close to real life.

When using a game-based approach, teachers should be aware of some problems they might come across with:

1. First of all it is the noise. Since games excite students so much they can lead to some extra noise, loud laughter, shouting or screaming. Often such teachers may be asked by their colleagues to keep quiet. To prevent such situation students should be asked not to forget that they are at University, in the class.
2. Another fact is related to students. When a teacher sticks to game-based approach students might get an impression that they do not learn anything new, and the only thing they do in the English language class is playing games. To avoid it a teacher should give proper time for games in the class. In general in a 1.5 hour class a game should take no more than 30 minutes.
3. Games are great instruments for teaching a foreign language and they create a lot of opportunities for learners to communicate in a relaxed, friendly and cooperative environment. However, it is not a very good idea to play games every class; they should be combined with other methods and techniques. Besides it is important to remember that teachers should respect the idea that a game should be free, voluntary and not forced and understand that games are 'often most effective as student- centered activities, where students can make their own choices about what to play, or indeed to play at all' (Brandt, 2002).

Another type of games which are becoming more and more popular is digital games. Such kind of games as online games can also be effectively used for distant learning. For example, Free rice is a non-profit website, aimed at developing vocabulary and grammar skills in English (Free rice). For each question answered correctly, 10 grains of rice are donated through the world food programme to help end hunger. Another example of online games is Vocab Sushi which expands vocabulary with the activities that use real-world examples of sentences from various sources (Vocab sushi). The game is steadily giving you harder words and showing your progress over time. The student can view the list of vocabulary, listen to the pronunciation and do the test to practice words.

Obvious advantage of online games is that they are easy to integrate in learning management system. For example, LinguaLeo offers free personalized system for learning English (LinguaLeo). Leo the Lion is the main character of the service and a personal guide to the language jungle. This lion eats meatballs, and to receive the meatballs a user has to read texts, watch videos, complete language quests, and consolidate his knowledge during training. They can also track their learning progress using the program's monitoring tools. A defining feature of the service is that it allows each user to choose real-life content that he or she likes. The service uses gaming

principles to capture the interest of learners, maximize enjoyment and engagement, and inspire them to continue learning.

Most of the works reviewed in this paper share the view that game-based learning is less about the digital or non-digital game as a specific entity and more about the complex social dynamics that surround it.

#### **4. Conclusions**

The given work provides analyses of game-based approaches in teaching EFL as well as distinguishes between gamification and game-based approaches. It overviews how teaching the English language can benefit from games and various game techniques with focus on teaching EFL to students specializing in information technology. All studies related to game-based teaching highlight its main advantages such as boosting learners' motivation and engagement, competitiveness, improving language skills, using English in situations close to real life, cooperative environment. In addition, students note that using games in the class impact positively on problem solving skills, team work skills, logical and creative thinking, help them to overcome some psychological barriers and express themselves. Different types of games can be used in the class, the choice of a game will depend on the skills a teacher wants to practice or enhance in their students. The work also shows experience of the English teachers at Kazan Federal University on implementing game-based methods in teaching English to students specializing in information technologies, which proves that most games (digital, non-digital, communicative, grammar, etc.) are suitable for teaching ESP as well.

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